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single independent variable, and the simultaneous determination of the singular solutions, if such exist; the generalisation of the transformed types, and the application of the result to the integration of a large variety of partial differential equations in any number of independent variables, and the simultaneous determination of their singular solutions, where such exist.

2. The examination of the general theory commonly attributed to Laplace.

3. The indication of certain desiderata.

February 4, 1858.

The LORD WROTTESLEY, President, in the Chair.

The following communications were read :—

- I. “On the daily Fall of the Barometer at Toronto.” By
THOMAS HOPKINS, Esq. Communicated by WILLIAM
FAIRBAIRN, Esq. Received December 19, 1857.

(Abstract.)

In this paper the writer exhibited tables of the movements of meteorological instruments registered at Toronto in 1846, in the months of January and July, as specimens of the changes which take place in the atmosphere in winter and summer. The principal object was to find the cause of the fall of the barometer in the middle of the day. The author endeavours to show that the vapour, which in the early part of the day was produced by solar heat at the surface, by its expansive power, bore that heat to the upper regions of the air, where it was condensed by the cold of the gases in that situation, when the heat of elasticity was set at liberty to warm and expand the gases, and that it was this expansion which reduced atmospheric pressure in the locality and caused a fall of the barometer.